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Recent area and volume changes of Marukh glacier in western Caucasus

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Field studies have been carried out at Marukh glacier located in western part of the Northern Caucasus in summer 2011. Studies included ground-based radio-echo sounding measurements at a frequency of 20 MHz and glacier surface elevation survey using a dual frequency differential GPS receiver.
Marukh Glacier is most western valley type glacier in the Russian Greater Caucasus. It is located 60 km from the Black Sea and was selected as most maritime glacier in the Soviet Union for direct measurements of ice, water and energy balances during IHD (International Hydrologycal Decade) in 1966-67-1981-82 when mass balance measurements were accompanied by meteorological observations and several topographic map were completed in scale of 1:10000.
Detailed volume and surface area changes of the glacier for the period 1945-2011 were obtained using aerial photo, satellite images and topographic maps analysis. Annual glacier accumulation, ablation and mass balance have been estimated for the period of 1967 to 2011 using direct measurements (1967-1982) and mass balance reconstruction based on meteorological data.
It is founded that Marukh glacier is retreating and has reduced its surface area by 17% over the past 66 years. Glacier volume is 0,276 km3 in 2011 and has decreased by 0,06 km3 since 1967.